An illustration of web survey methodology

- PhD project: Organic and healthy food strategies in schools

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1. Introduction

A food and nutrition revival has hit European schools in recent years and as a result school meal provision is undergoing significant changes. Unhealthy eating and growing prevalence of obesity among children and adolescents are significant threats that seem to foster a remaking and rethinking of the food and nutrition "technology" at school. Also call for climate friendly and sustainable food consumption strategies seem to impact the way food, nutrition and health is being shaped at school including the way the food service is carried out. As a result the "novel" school food services increasingly tends to include an organic supply chain.

A former study in the Danish primary schools has shown that there is an association between organic school food policies and indicators (proxies) for healthy eating among children when (school food coordinators) statements on indicators (proxies) for healthy eating are used as variable. This project continue to search for the above signs of associations but involving also a "bottom" level (pupils) perspective in addition to the "top" level (school food coordinators) in the previous study.

The project is to study the following hypothesis: organic food service praxis/policy (POP) is associated with praxis/policies for healthier eating in Danish school food service. In other words if organic procurement policies and the resulting praxis in schools can help build a healthier eating habits among pupils in such school as compared to schools without organic policies/praxis.

The last perspective is going to be studied in a comparative study design where the Danish case (existing data from WBQ) will be compared with new data from school food service in Germany, Italy and Finland. These data is going to be collected through a web survey.

The project is a part of the iPOPY research project funded through the European Research Arena project Core Organic.

2. Background

From previous study that in fact processes and attitudes related to organic foods implement seems to associate with changes in the health profile of the foods on offer in different types of public catering. Mikkelsen et al (2006) have shown that "green" worksite canteen catering managers offered more healthy options than their non green counterparts, and a study by He & Mikkelsen (2008) indicate that organic school food operators in Denmark on a number of indicators for healthy eating scored higher than their non organic counterparts.

By December 2006 there were 20-25% of Danish primary schools which have a school food service based on the notion of a real meal. Approx 50% have some sort of other simple food arrangement where as 25 % has no food on offer. However only a limited number of students buy food at school. Lunch boxes from home remain the most common and traditional way for children to have lunch at school. Some of the municipalities have decided to adopt a sustainable procurement policy, so there is certain amount of organic ingredients involved in the school meals, besides, some of schools have already achieved 92% of the school food is organic. However, there is neither definite national guideline for the percentage of organic food in school meals nor national regulations or funding for implementing school meals provision in the country.

Unlike in Denmark, Italy and Finland has established a relative complete school food service. Especially in Italy organic foods is pretty much involved in schools meals. In Germany, school food choices are more or less like in Denmark.

3. State of project's objects

The whole study will divide into 3 parts and the intention is to prove the hypothesis from two levels of research objects (See table 1). One is named as "top" level, refers to the group of people in schools which implement, arrange or operate school food systems, such as school food coordinator. The other is "bottom" level, refers to the pupils that having lunches provided by schools during schools days.

Table 1. The research objects in each working package.

	A (DK)	**B (DE, IT and FI)**	**C (DK)**
"Top" level (school food coordinators)	X (done)	X	
"Bottom" level (pupils)			X

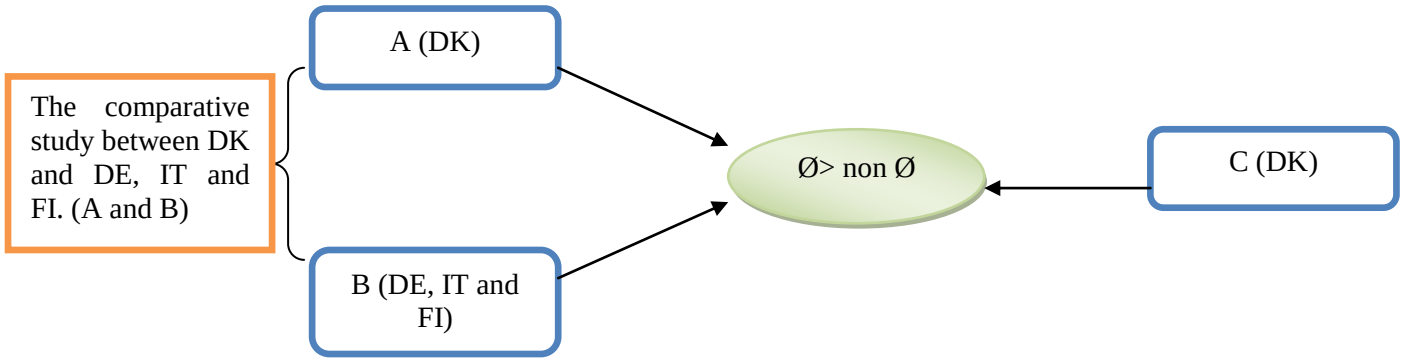

Figure 1. The illustration of relationships in 3 working packages to prove the hypothesis.

Part A will use existing research results to prove the hypothesis from "top" level. The former study was performed among school food coordinators in Danish public primary schools, a total number of 93 schools with an organic procurement policy and 86 schools without were selected and expected

to complete the web questionnaire. The data shows that there are more positive associations between organic food procurement policy/praxis and healthier eating practices among children than the schools only provide conventional foods. The results (79 schools had answered the questionnaire) indicate also that organic food intervention can be supportive for strategies that increase the healthiness of school eating environment.

Part B will perform 3 web surveys among the "top" levels in 3 European countries, Germany, Italy and Finland. The study is basically replication of part A but the web based questionnaire will adapt to local school food culture according to different cultures in the countries. The surveys in 3 countries are work out in cooperation with iPOPY partners, translation of questionnaire, invitation letter and reminds letters, and also get contact information of schools. The result of research will not only become an evidence of the hypothesis, but also produce a comparative study regarding school food practices between Denmark and the other 3 countries. Through the comparisons, it might see whether the schools with organic foods provision in these 3 countries are also eating healthier than the schools with conventional foods.

Part C is to compare different type of schools which adopted the sustainable policies or without, measure frequency of intake of food items among the pupils. In this working package the research will only carry out in Danish public primary schools and the research object is "bottom" level. The goal is to find if the sustainable procurement policies/organic food ingredient involved in school meals results in a healthier eating habit for children. Thereby, the hypothesis might be proved from the "bottom" level.

4. Methods

4.1 Part A

The study was to perform a quantitative survey through the Web Based questionnaire (WBQ) in 179 public Danish primary schools among school food coordinators. Both the schools with organic food provision and the schools with only conventional food were selected. The purpose of this study was to examine whether organic food intervention strategies in school meal systems could support the development of healthier eating patterns among pupils. Results indicate that organic food intervention strategies can be supportive for strategies to increase the healthiness of school eating patterns.

The study was completed as a master thesis and going to produce a peer reviewed paper in journal of food service. In this project, the paper will be used as evidence to prove the hypothesis of this project.

4.2 Part B

Design: A quantitative survey using a Web based questionnaire (WBQ) will be carried out in which the schools having organic food provision and the schools having no organic food provision. The surveys will be performed in selected public primary or/and secondary schools in Germany, Italy and Finland among school food coordinators.

***Research object*:** The school food coordinators in the public primary or/and secondary schools in Germany, Italy and Finland.

***Amount of individuals*:** Min. 100 school food coordinators from the schools where has organic food provision. And min. 100 school food coordinators from the schools where has no organic food provision.

Outcome measures to be tested

- Attitudes toward organic foods
- Attitudes towards healthy eating
- School healthy policies
    - ✓ Organic food procurement policy
    - ✓ Food and nutrition policy
    - ✓ Physical activity policy
- School food serving practice
    - ✓ School fruit/milk scheme
    - ✓ School kiosk
    - ✓ School lunch room
    - ✓ School canteen

Research period: 1 year

Study design: The initial questionnaire will be designed in a Word format and the language is in English. After the first revision, the questionnaire will be translated into German, Italian and Finnish respectively in order to perform the questionnaire in 3 countries. The pilot test of the questionnaire is needed in all 3 countries and 2 schools in each country, one organic school - the school which base the provision on a certain amount of organic food provision, and the other a non organic school - the school which base the provision on conventional food supply, will be selected and test the questionnaire. The Word format questionnaire will be sent by e-mails to the school food coordinator with an introduction of the project. After gathered all the comments from the test, the questionnaire will be modified for the second and last time. The completed questionnaire is then converted into a web based by using the software SurveyXact (http://www.surveyxact.com), which was offered by Rambøll Management, a management consulting company in Denmark. The final WBQ was opened in a web browser through a link.

In order to increase respondent rate, a pre communication with schools is necessary. In this study, the iPOPY working partners in Germany, Italy and Finland will help holding the meetings/phone calls/e-mails communications with school food coordinators regarding the coming questionnaire. The intention of the meetings is to help schools understand the project and questionnaire.

The potential participants are not only school food coordinators but could also be the school headmaster or school food caterer, etc (see Table 2).

Table 2. Informant inventory, the possible participants for answering the WBQ.

Informants	Responsibility
School headmaster	The principal of the school.
School coordinator	The coordinator between the municipality and the school environment, and also determine entities to operate the school meal system.
School kitchen operators	The person who is responsible for preparing school food and carry out serving practices, etc.
School food caterer	The person to ensure the quality and variety of school meals, and cooperate with food suppliers or catering company.
Teachers	They involved as school kitchen operators.

In these 3 countries, the contact information of schools will collect through the help of iPOPY partners. They will offer the list of school e-mails. Finally, a total number of XX schools will be selected and expected to complete the questionnaire. The web link to the WBQ and the invitation letter to the participants will send to the developed e-mail list. The software of SurveyXact has the function to send out the WBQ to the participants individually.

The WBQ will open for four weeks and 3 ways will be used to increase the WBQ response. 1) Address the e-mail to a specific person at the school if get to know his/her name. 2) Prepare two reminder letters for the schools which don't answer the WBQ. Send the first by e-mail one week after sending WBQ, and the second first a week later. The link to the WBQ should be addressed again in the e-mail. 3) Contain a small lotto inducement, i.e. an airfare round trip to visit an organic school in Denmark or Italy.

The content sequence of the WBQ is mainly followed as attitude of respondents, existing school healthy policies and school food serving practices. The attitude of respondents is about to ask about the standpoint of these school food coordinators regarding promoting the organic foods and healthy eating habits through school meals service and curricular activities. Existing policies is aim to examine whether the schools adopted a healthy policy with regard to school food. The last section, serving practices, is more pay attention on provision ways of meals at schools.

The analysis of the WBQ results will complete by using Microsoft Excel 2007, and SPSS, which help exploring and analyzing data, "a comprehensive computer system for analyzing data provides statistical analysis and data management systems in a graphical environment (SPSS, 1999).".

4.3 Part C

Design: a comparative analysis will be carried out in which school having an organic policy will be compare with school having no organic policy. Inclusion criteria will in both cases be the existence of a food & nutrition policy. A stratified sampling will be applied and 5 clusters will be sampled.

Research object: The pupils are at 5th - 6th grade in the public primary schools in Denmark.

Amount of individuals:100 pupils from 5 schools where has adopted an organic policy.

100 pupils from 5 schools where don't have an organic policy.

Outcome measures to be tested

- Dietary intake: FFQ, recorded by mobile technology.
- Attitudes toward organic foods
- Attitudes towards healthy eating
- Knowledge about healthy eating
- Knowledge about organic foods
- Knowledge about physical activities
- Intake of food items in each school day

Research period: 1.5 years

In the project, an observational cohort study design will be chosen and used to test whether the organic conversion in school food service directly or indirectly correlates with healthier eating habits and behaviour among children, comparing to schools without organic policies. A sample of 100 pupils are at 5th - 6th grade that are all potential users of school meals in 5 schools having an organic policy, and 100 pupils in 5 schools without an organic policy will be chosen. Inclusion criteria for the study will be presence of a prepared food provision with various food items.

Observational studies have no desire to control the research object, which make research easier to observe and record. ***Cohort studies*** is the longitudinal observation of the individual through time, and the collection of data at regular intervals, so recall error is reduced.

A longitudinal study of food intake of children at schools can be made through by a self administered ***dietary assessment tool***, ***FFQ***. This FFQ will ask pupils about usual food and beverage consumption during the school days in the recent past, e.g. one year.

24-hour DR: In this project, the investigator will ask the pupils what they ate in the previous 24-hour in direct chronological order from the first foods in the morning to the last foods before breakfast on the day of the interview.

Study design: The relevant methodology courses will be taken at the beginning, and literature study is also going at the same time, in order to build an initial questionnaire. The FFQ will be first evaluated by experts in the field of nutritional assessment methods either in the internal research group or external resource. 24-hour DR can be used as a trial tool for the FFQ to see if there are really differences between organic/non organic schools. Before carry out the FFQ, some interviews with selected pupils should have done. By the interviews, the questionnaire will be examined if it is clear and readable by children. At the last, a pilot study will administrate exactly the same way as final study. But the schools which are used for the pilot study should not participate in the final study.

After above work, the FFQ should be kept simple and plain due to the age of respondents, and the content should be as brief as possible but also provide enough information in order to test the hypothesis. The self administrated FFQ will convert into automated based FFQ. So the pupils can easily open and fill the questionnaire through the mobile. The introductory letter that explains how to operate and complete the questionnaire correctly will send out before or together. After collecting data from the FFQ, Microsoft Office and statistic software SPSS will apply for analysis of the result.

The (new) mobile technology will involve in the research. The pupils can simply input their everyday's intake by mobiles. It is possible to show the choices through picture/animation illustration, which makes more interesting for children to participate in the research. This automated self administrated dietary recall need to explore more later on.

5 References

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